

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

Claim 1-11. (Canceled)

Claim 12. (Currently Amended) [Use according to Claim 11] The method of claim 30, wherein all the amino acids of the compound are D-isomers.

Claim 13. (Currently Amended) [Use according to Claim 9] The method of claim 30, wherein Y' is Lys.

Claim 14. (Currently Amended) [Use according to Claim 13] The method of claim 30, wherein Y' is Lys and Z' is Phe.

Claim 15. (Currently Amended) [Use according to Claim 11] The method of claim 30, wherein Y' is Phe.

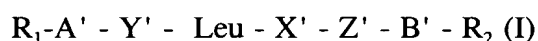
Claim 16. (Currently Amended) [Use according to Claim 11] The method of claim 30, wherein X' is Val-Val.

Claim 17. (Currently Amended) [Use according to Claim 11] The method of claim 30, wherein R<sub>1</sub> is acetyl.

Claim 18. (Currently Amended) [Use according to Claim 11] The method of claim 30, wherein R<sub>1</sub> is H or R<sub>2</sub> is H.

Claims 19-26. (Canceled)

Claim 27. (New) A method for treating or preventing demens in a patient having Downs syndrome comprising administering to the patient in need thereof an effective amount of a compound according to formula



in which X' means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in  $\beta$  amyloid peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

Y' means any amino acid;

Z' means any non-acidic amino acid;

A' means a direct bond or an  $\alpha$ -amino acid bonded at the carboxyl terminal of the  $\alpha$ -carboxy group or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the  $\alpha$ -carboxy group;

B' means a direct bond or an  $\alpha$ -amino acid bonded at the  $\alpha$ -nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the  $\alpha$ -nitrogen of the N-terminal  $\alpha$ -amino acid;

R<sub>1</sub> is H or -CO-R<sub>3</sub> bonded at the  $\alpha$ -amino group of A';

R<sub>2</sub> is H, -OR<sub>4</sub> or NR<sub>5</sub>R<sub>6</sub> all bound to the  $\alpha$ -carboxyl group of the  $\alpha$ -carboxyterminal of B';

R<sub>3</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

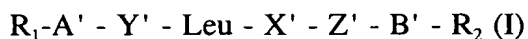
R<sub>4</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

R<sub>5</sub> and R<sub>6</sub> independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are -(CH<sub>2</sub>)<sub>n</sub>-, where n is 4-5;

R<sub>1</sub> and R<sub>2</sub> together can form a hydrocarbon ring or heterocyclic ring; and

all the  $\alpha$ -amino acids can be either D- or L-isomers.

Claim 28. (New) A method for treating or preventing hereditary cerebral hemorrhage associated with amyloidosis (Dutch type) comprising administering to a patient in need thereof an effective amount of a compound according to formula



in which

X' means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in amyloid  $\beta$  peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

Y' means any amino acid;

Z' means any non-acidic amino acid;

A' means a direct bond or an  $\alpha$ -amino acid bonded at the carboxyl terminal of the  $\alpha$ -carboxy group or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the  $\alpha$ -carboxy group;

B' means a direct bond or an  $\alpha$ -amino acid bonded at the  $\alpha$ -nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the  $\alpha$ -nitrogen of the N-terminal  $\alpha$ -amino acid;

R<sub>1</sub> is H or -CO-R<sub>3</sub> bonded at the  $\alpha$ -amino group of A';

R<sub>2</sub> is H, -OR<sub>4</sub> or NR<sub>5</sub>R<sub>6</sub> all bound to the  $\alpha$ -carboxyl group of the  $\alpha$ -carboxyterminal of B';

R<sub>3</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

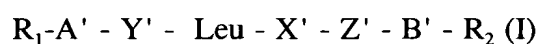
R<sub>4</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

R<sub>5</sub> and R<sub>6</sub> independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are -(CH<sub>2</sub>)<sub>n</sub>-, where n is 4-5;

R<sub>1</sub> and R<sub>2</sub> together can form a hydrocarbon ring or heterocyclic ring; and

all the  $\alpha$ -amino acids can be either D- or L-isomers.

Claim 29. (New) A method for preventing fibril formation of human amyloid protein in a patient in need thereof comprising administering to said patient an effective amount of a compound according to formula



in which

X' means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in amyloid  $\beta$  peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

Y' means any amino acid;

Z' means any non-acidic amino acid;

A' means a direct bond or an  $\alpha$ -amino acid bonded at the carboxyl terminal of the  $\alpha$ -carboxy group or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the  $\alpha$ -carboxy group;

B' means a direct bond or an  $\alpha$ -amino acid bonded at the  $\alpha$ -nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the  $\alpha$ -nitrogen of the N-terminal  $\alpha$ -amino acid;

R<sub>1</sub> is H or -CO-R<sub>3</sub> bonded at the  $\alpha$ -amino group of A';

R<sub>2</sub> is H, -OR<sub>4</sub> or NR<sub>5</sub>R<sub>6</sub> all bound to the  $\alpha$ -carboxyl group of the  $\alpha$ -carboxyterminal of B';

R<sub>3</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

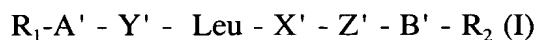
R<sub>4</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

$R_5$  and  $R_6$  independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are  $-(CH_2)_n-$ , where n is 4-5;

$R_1$  and  $R_2$  together can form a hydrocarbon ring or heterocyclic ring; and

all the  $\alpha$ -amino acids can be either D- or L-isomers.

Claim 30. (New) A method for inhibiting polymerization of an amyloid  $\beta$  peptide in a patient in need thereof comprising administering to said patient a therapeutic effective amount of a compound having formula



in which

$X'$  means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in amyloid  $\beta$  peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

$Y'$  means any amino acid;

$Z'$  means any non-acidic amino acid;

$A'$  means a direct bond or an  $\alpha$ -amino acid bonded at the carboxyl terminal of the  $\alpha$ -carboxy group or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the  $\alpha$ -carboxy group;

$B'$  means a direct bond or an  $\alpha$ -amino acid bonded at the  $\alpha$ -nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the  $\alpha$ -nitrogen of the N-terminal  $\alpha$ -amino acid;

$R_1$  is H or  $-\text{CO}-R_3$  bonded at the  $\alpha$ -amino group of A';

$R_2$  is H,  $-\text{OR}_4$  or  $\text{NR}_5\text{R}_6$  all bound to the  $\alpha$ -carboxyl group of the  $\alpha$ -carboxyterminal of B';

$R_3$  is a straight or branched carbon chain of 1-4 carbon atoms;

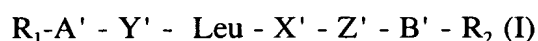
$R_4$  is a straight or branched carbon chain of 1-4 carbon atoms;

$R_5$  and  $R_6$  independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are  $-(\text{CH}_2)_n-$ , where n is 4-5;

$R_1$  and  $R_2$  together can form a hydrocarbon ring or heterocyclic ring; and

all the  $\alpha$ -amino acids can be either D- or L-isomers.

Claim 31. (New) A method for treating or preventing Alzheimer's disease or another disease characterized by amyloidosis in a patient in need thereof comprising administering to said patient a therapeutic effective amount of a compound having formula



in which

$X'$  means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in amyloid  $\beta$  peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

$Y'$  means any amino acid;

$Z'$  means any non-acidic amino acid;

A' means a direct bond or an  $\alpha$ -amino acid bonded at the carboxyl terminal of the  $\alpha$ -carboxy group or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the  $\alpha$ -carboxy group;

B' means a direct bond or an  $\alpha$ -amino acid bonded at the  $\alpha$ -nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the  $\alpha$ -nitrogen of the N-terminal  $\alpha$ -amino acid;

R<sub>1</sub> is H or -CO-R<sub>3</sub> bonded at the  $\alpha$ -amino group of A';

R<sub>2</sub> is H, -OR<sub>4</sub> or NR<sub>5</sub>R<sub>6</sub> all bound to the  $\alpha$ -carboxyl group of the  $\alpha$ -carboxyterminal of B';

R<sub>3</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

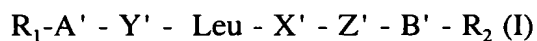
R<sub>4</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

R<sub>5</sub> and R<sub>6</sub> independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are -(CH<sub>2</sub>)<sub>n</sub>-, where n is 4-5;

R<sub>1</sub> and R<sub>2</sub> together can form a hydrocarbon ring or heterocyclic ring; and

all the  $\alpha$ -amino acids can be either D- or L-isomers.

Claim 32. (New) A method for inhibiting polymerization of an amyloid  $\beta$  peptide to a ligand comprising contacting an amyloid  $\beta$  peptide containing environment with a polymerization inhibitory effective amount of a compound according to formula



in which



X' means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in amyloid  $\beta$  peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

Y' means any amino acid;

Z' means any non-acidic amino acid;

A' means a direct bond or an  $\alpha$ -amino acid bonded at the carboxyl terminal of the  $\alpha$ -carboxy group or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the  $\alpha$ -carboxy group;

B' means a direct bond or an  $\alpha$ -amino acid bonded at the  $\alpha$ -nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the  $\alpha$ -nitrogen of the N-terminal  $\alpha$ -amino acid;

R<sub>1</sub> is H or -CO-R<sub>3</sub> bonded at the  $\alpha$ -amino group of A';

R<sub>2</sub> is H, -OR<sub>4</sub> or NR<sub>5</sub>R<sub>6</sub> all bound to the  $\alpha$ -carboxyl group of the  $\alpha$ -carboxyterminal of B';

R<sub>3</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

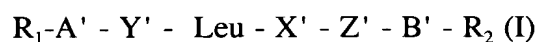
R<sub>4</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

R<sub>5</sub> and R<sub>6</sub> independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are -(CH<sub>2</sub>)<sub>n</sub>-, where n is 4-5;

R<sub>1</sub> and R<sub>2</sub> together can form a hydrocarbon ring or heterocyclic ring; and

all the  $\alpha$ -amino acids can be either D- or L-isomers.

Claim 33. (New) A method for inhibiting polymerization of an amyloid  $\beta$  peptide comprising contacting an amyloid  $\beta$  peptide containing environment with a polymerization inhibiting effective amount of a compound according to formula



in which

X' means any group or amino acid imparting to the compound of formula (I) the ability to bind to the KLVFF-sequence in amyloid  $\beta$  peptide, or two amino acids imparting the same ability, but with the proviso that one is not proline;

Y' means any amino acid;

Z' means any non-acidic amino acid;

A' means a direct bond or an  $\alpha$ -amino acid bonded at the carboxyl terminal of the  $\alpha$ -carboxy group or a di-, tri-, tetra- or pentapeptide bonded at the carboxyl terminal of the  $\alpha$ -carboxy group;

B' means a direct bond or an  $\alpha$ -amino acid bonded at the  $\alpha$ -nitrogen or a di-, tri-, tetra- or pentapeptide bonded at the  $\alpha$ -nitrogen of the N-terminal  $\alpha$ -amino acid;

R<sub>1</sub> is H or -CO-R<sub>3</sub> bonded at the  $\alpha$ -amino group of A';

R<sub>2</sub> is H, -OR<sub>4</sub> or NR<sub>5</sub>R<sub>6</sub> all bound to the  $\alpha$ -carboxyl group of the  $\alpha$ -carboxyterminal of B';

R<sub>3</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

R<sub>4</sub> is a straight or branched carbon chain of 1-4 carbon atoms;

$R_5$  and  $R_6$  independently are H, alkyl, cycloalkyl, aryl or substituted aryl or together are

$-(CH_2)_n-$ , where n is 4-5;

$R_1$  and  $R_2$  together can form a hydrocarbon ring or heterocyclic ring; and

all the  $\alpha$ -amino acids can be either D- or L-isomers.